

Claim Attachment

19. (Currently Amended) An interactive system for intervention inside a region of a patient, said interactive system comprising:

a device operable to receive image data of the region of the patient, wherein the image data includes image data of a first reference structure to establish an image reference frame for the region of the patient;

a second reference structure positioned relative to the patient to establish a patient reference frame for the region of the patient;

a controller operable to correlate the position of the first reference structure in the image reference frame with the position of the second reference structure in the patient reference frame;

an active member operable to perform the intervention; and

a tracking system operable to determine a position of at least the second reference structure and a position of the active member and configured to transmit the determined positions of the second reference structure and the active member to the controller;

wherein the controller is configured to determine the position of the active member based on the determined position of at least the active member and the correlation of the first reference structure and the second reference structure.

30. (Currently Amended) The interactive system as defined in Claim 29 wherein the marker device [[is]] includes a telemetry system operable to determine the position of the second reference structure in the patient reference frame and transmit

the determined position to the controller, wherein the controller is operable to perform the correlation at least with the transmitted determined position.

35. (Currently Amended) The interactive system as defined in Claim 34 wherein the optical telemetry system ~~utilizes~~ includes at least one of a video camera or ~~[[and]] an infrared cameras~~ camera to image at least the second reference structure and configured to plot points of the second reference structure.

48. (Currently Amended) The interactive system as defined in Claim ~~[[47]]~~ 19 wherein the active member is selected from a group comprising a trephining tool, a needle, a laser, a radioscope emission head, an endoscopic viewing system, a tool used in the intervention, an implant, a sighting system, a microscope, and combinations thereof.

49. (Currently Amended) The interactive system as defined in Claim ~~[[47]]~~ 19 further comprising a telemetry system operable to determine the position of the active member in the patient reference frame, said telemetry system in communication with the controller.

51. (Currently Amended) The interactive system as defined in Claim ~~[[47]]~~ 19 wherein the device includes a display operable to display the image data of the region of the patient in relation to the image reference frame.

54. (Currently Amended) The interactive system as defined in Claim 51 wherein the display is further operable to display the real-time position of the active member in the image reference frame based on the determined position of the active member with the tracking system.

59. (Currently Amended) The interactive system as defined in Claim [[47]] 19 wherein the active member is robotically controlled.

66. (Currently Amended) The interactive system as defined in Claim [[47]] 19 wherein the intervention is at least one of a neurosurgery, orthopedic surgery, cranial surgery, and combinations thereof.

73. (Currently Amended) An interactive system for intervention inside a region of a patient, said interactive system comprising:

a device operable to receive image data of the region of the patient, wherein the image data includes image data of a first reference structure to establish an image reference frame for the region of the patient;

a second reference structure positioned relative to the patient to establish a patient reference frame for the region of the patient;

a controller operable to correlate the position of the first reference structure in the image reference frame with the position of the second reference structure in the patient reference frame;

an active member operable to perform the intervention inside the region of the patient;

a tracking system operable to track the position of the active member in relation to the patient reference frame, the tracking system being in communication with the controller to transmit the tracked position of the active member as position information to the controller, wherein the controller is operable to determine the position of the active member relative to the image reference frame; and

a display operable to display the real-time position of the active member in the image reference frame based on the controller determined position of the active member based on the tracked position of the active member from the tracking system, wherein the controller is configured to generate a representation of the active member that is displayed on the display relative to a display of the received image data.

86. (Currently Amended) The interactive system as defined in Claim 73 wherein the display forms part of the device and wherein the image data received is acquired image data of the region of the patient and is displayed on the display, further wherein the representation of the active member is displayed on the acquired image data of the region of the patient.

87. (Currently Amended) A method for performing an image guided intervention inside a region of a patient, said method comprising:

capturing accessing a first image data of the region of the patient captured with an imaging system where the first image data includes image data of a first reference structure;

identifying the first reference structure in the first image data to establish an image reference frame;

identifying a second reference structure relative to the patient to establish a patient reference frame;

correlating the position of the first reference structure in the image reference frame in the first image data with the position of the second reference structure in the patient reference frame; and

tracking an active member at least to determine a position of the active member in the patient reference frame to determine a location of the active member based on the tracking of the active member and transmitting the determined position in the patient reference frame for display on a display device relative to the image reference frame of the first image data based at least on the correlation of the first reference structure and the second reference structure.

90. (Currently Amended) The method as defined in Claim 89 further comprising transmitting from the tracking markers a signal and receiving the transmissions transmitted signal with an electromagnetic sensor to identify the position of the second reference structure in the patient reference frame.

99. (Currently Amended) The method as defined in Claim [[87]] 96 further comprising:

displaying the position of the active member as a representation of the active member in the accessed first image data that is captured image data that is correlated to the patient based on the correlation and displayed on a display device with the position of the active member being correlated between the patient reference frame defined by the first reference structure fixed to the patient and the image reference frame based on the tracking of the active member.

100. (Currently Amended) The method as defined in Claim 99 further comprising identifying the position of the active member with a telemetry system by transmitting the tracked location of the active member for displaying the representation of the active member.

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